invention from the cited prior art. In addition, attention has been paid to avoiding any vague language so that further rejection of the amended claims and of newly-added claim 12 is not anticipated.

The following comments will discuss each of the cited references and will highlight the patentable aspects of the present invention as compared with these references. However, it should first be mentioned that Applicants are of the opinion that the most relevant reference is the Assignee's previous patent, 5,317,788, cited as being of general interest by the Examiner, this patent serving as a basis for the improvement that constitutes the present invention. The combined elements of independent claim 12 distinguish over this prior patent of Applicants, as well as the references cited in the Examiner's prior art rejection.

TRACY

In this patent, the retention of a tubular cord is ensured by insertion of a compression plug into the end of the tubular cord. A first embodiment of the plug is denoted as 28 of Fig. 5, while the second embodiment is denoted as 65 of Fig. 11. In the case of the second plug 65, it is fused with an adjacent portion of plastic coating 21 of the hook, as explained in col. 5, lines 1-4, of the patent specification.

Tracy's retention relies upon the lateral friction of the compression plug within the tubular cord. In the case of plug 65, the effect of fusion is significant. Tracy explains that the cord is elastic, but it is obvious that a thin walled stretchable tubular cord cannot resist high levels of tension, so the retaining effect of the retaining means need only be effective so long as the tension is not sufficient to break the tube or hook. Breakage of the tube is clearly anticipated, as made clear in the specification, for example, at col. 2, lines 12 *et seq.*

The gist of the Tracy patent is not to improve retention of the cord since the cord is liable to break rapidly when subjected to high tension. Rather, it is to improve the resistance to abrasion and the frictional grip of the cord so as to prevent deformation of

the hook. The reinforcing metal component of the hook is to increase "toughness" thereby preventing the hook from bending out of shape (see col. 2, lines 15 *et seq.*). There is, therefore, no suggestion in the patent that a metal reinforcing component can provide an abutment ring to improve the retaining of the cord, as is the case with the present invention. Indeed, the retaining effect in Tracy is due to a combination of a compression fitting and fusing of materials but certainly not to a stop abutment, as claimed.

De ANFRASIO

This reference aims to improve the tension resistance of a cable fastening device. The reference uses a combination of members to accomplish this. These include an eyelet C2 formed at the end of a cable and maintained by a ring 1. A steel metal hook 2 having a bent end 2a is engaged in the eyelet. A covering 3 having an enlarged finger grip is molded on the hook and embeds the eyelet of the cable. This combination is quite different from the claimed invention as set forth in newly-added claim 12.

The Examiner holds that Tracy discloses a passage having a taper that defines an abutment for stopping an end of a cable. However, Applicants respectfully disagree. In Tracy, the cable goes through the passage and is not retained by an abutment within the passage, but, rather, by frictional engagement of a compression plug inside the tubular cable and fusing of the plug with the plastic material of the hook.

It should also be noted that the combination of De Anfrasio and Tracy is quite unlikely since it would hardly be obvious to substitute the eyelet and hook combination of De Anfrasio for the compression plug of a tubular cord as taught by Tracy. This would require a complete redesign of Tracy that is neither taught nor suggested by either reference.

EINHORN

Fig. 5 of this reference discloses a passage 31 formed in a hangar for retaining the end of a cord which has been tied to form a knot. There is no disclosure of the retaining system as defined in the amended claims of the present invention. Further, there is no possibility to combine this reference with Tracy since Tracy is not designed to retain a knot which would have to be formed at the end of the tubular cord and, of course, this would prevent the insertion of a compression plug.

McINTIRE

This reference discloses a hook construction which is quite different from that of Tracy and the claimed invention. In McIntire, the cord is retained in the hook by a combination of a folded end 30 formed at one end of the cord 43 that is held closed by a clip 31. A casing 40 is retained within a wire bale 42 provided with a hook 44 and forming a passage 41 for the cord 43. A collet piece 41 is movable within the casing 40 to frictionally grip the cord when the cord is pulled (see col. 4, lines 18-23). The McIntire retaining system has nothing to do with the retaining system of Tracy and it would hardly be obvious to one of ordinary skill in the art to substitute one cord retention system for the other.

WRIDGE

This reference discloses a hook for cable 20. The hook is provided with a body portion 14 formed with an aperture extending through the complete length of the body portion and provided with bearing seats for a ball bearing 17 and a tapered roller bearing 19.

The retaining system of this reference includes a solder plug 22 placed about the end of cable 20 and a ferrule 21 that is completely filled by the solder plug and which is swivelable within the bearings. It is submitted that any substitution of this solder

plug-ferrule-bearing combination with the compression plug-tubular cord combination of Tracy could hardly be considered as obvious to one of ordinary skill in the art.

In summary, it is Applicants' contention that, although the present invention relates to a relatively simple mechanical device, it includes a combination of elements that are neither met by the prior art nor made obvious by the references cited. It is interesting to note that the Examiner has had to rely upon as many as three references to combine bits and pieces of the relatively simple invention.

This is certainly indicative of the novelty and unobviousness that the invention presents.

Reconsideration of the application, and favorable Action thereon, are courteously solicited.

In the event the Examiner believes an interview might serve to advance the prosecution of this application in any way, the undersigned attorney is available at the telephone number noted below.

The Director is hereby authorized to charge any fees, or credit any overpayment, associated with this communication, including any extension fees, to Deposit Account No. 22-0185.

Respectfully submitted,

Patrick J. Wells 46,355

Morris Liss, Reg. No. 24,510
Connolly Bove Lodge & Hutz LLP
1990 M Street, N.W.
Washington, D.C. 20036-3425
Telephone: 202-331-7111

Date: 9/19/01

AMENDMENTS TO THE SPECIFICATION

Page 2, paragraph 11:

This wire is placed in the cavity of an injection mold so as to be coated in a synthetic resin or some other suitable material. For this operation, it is possible for example to use polyethylene or polypropylene for conventional hooks, or a polyamide or a reinforced polyamide for hooks that need to withstand abrasion.

Page 2, paragraph 12:

The cavity is shaped so that the injected material (M) (Figure 2) fits closely to the J-shaped portion (1) of the wire and to the shank (2), while being much thicker around the base (2') of the shank (2) and around the ring (3) of the wire so as to provide a finger grip block (B) having a through passage (4) whose axis is in line with the top of the curve of the J-shape.

Page 3, paragraph 4:

In a conventional manner, the end of the cable (5) is folded back onto itself and is crimped by means of a metal clip (6), e.g. a steel ring which is flattened after crimping. When traction is applied to the cable, this crimped end bears against the junction (4c) between the two ducts as reinforced by the ring (3) of the wire (1) (Figures 3 and 4).

Page 4, paragraph 4:

The mold cavity is designed so that the finger grip block (B) is of any desired ergonomic shape, e.g. having lateral recesses (a, b, c, d) enabling the hook to be held between the fingers, together with projecting portions (e, f) against which the fingers can bear. The lateral recesses can be made in portions of the block which project from the block, such as the recess (a) situated beside the shank (2).

Page 5, paragraph 2:

It will also be observed that the coating material does not have any holes, whereas in earlier devices, the locations of parts for holding the metal core in the mold leave the core visible at certain locations of the over-molded product, thereby requiring the locations to be provided with additional protection so as to avoid oxidation and swelling of the core, which could possibly lead to the coating being destroyed.

AMENDMENTS TO THE CLAIMS

3[/]. (Amended) A hook according to claim [2] 12, in which said [annular insert (3)] ring has an axis passing through [the] a top [(S)] of [the] a curve of the [J-shape] J-shaped first end section.

6[/]. (Amended) A hook according to claim [5] 12, in which [the] an inlet edge of the inlet duct [(4a)] is rounded so as to avoid leaving any sharp edge which could injure the cable.

7[/]. (Amended) A hook according to claim [5] 12, in which the [annular insert (3)] ring surrounds said inlet duct [(4a)] in the vicinity of its junction [(4c)] with the outlet duct [(4b)].

8[/]. (Amended) A hook according to claim [1] 12, in which the finger grip end block has lateral recesses [(a-d)] and projections [(e, f)] to form a finger grip.

9[/]. (Amended) A hook according to claim [1] 12, in which the finger grip end block [presents] connects a tilting safety tongue [(7)] fixed to said finger grip end block [and suitable] for bearing against [the] a free inside end [(E)] of the hook [on the inside of the hook].

10[/]. (Amended) A hook according to claim 9, in which the free end [(E)] is coated with extra injected material.

· Figure 2 is a section of the hook including the axis of the passage through the handle block;

· Figure 3 is a longitudinal section of the hook fixed to a cable;

· Figure 4 is a diagrammatic perspective view of the crimped end of a cable retained in the passage of the handle block;

· Figure 5 is a perspective view of the hook provided with a safety tongue;

· Figure 6 is a view of the hook on a plane perpendicular to the plane containing the curve of the hook; and

· Figures 7 and 8 relate to detail variants.

Detailed description of invention

In each case, the scale of the figures is appropriate for the corresponding explanations.

The reinforcement (A) of the hook is constituted (see Figure 1) by a rigid metal wire (A) having one end (1) curved into an upside-down J-shape and having its other end bent so as to lie in a plane perpendicular to the plane of the J-shape and curved so as to form an open or closed ring (3) therein.

The hook is preferably made of steel flat with an optionally rounded edge, the hook being formed edgewise so as to provide the greatest possible strength.

The ring (3) is substantially on the same axis as the top (S) of the curve of the J-shape and the shank (2) of the J-shape slopes slightly outwards going away from the ring.

This wire is placed in the cavity of an injection mold so as to be coated in a synthetic resin or some other suitable material. For this operation, it is possible for example to use polyethylene or polypropylene for conventional hooks, or a polyamide or a reinforced polyamide for hooks that need to withstand abrasion.

The cavity is shaped so that the injected material (M) (Figure 2) fits closely to the J-shaped portion (1) of the wire and to the shank (2), while being much

thicker around the base (2') of the shank (2) and around the ring (3) of the wire so as to provide a block (B) having a through passage (4) whose axis is in line with the top of the curve of the J-shape.

The overall thickness of the block in a plane perpendicular to the plane of the J-shape of the hook can, for example, be three to five times the thickness of the coated shank and it is four to eight times said thickness in a plane parallel to the plane of the J-shape, given the projecting portions presented by the block.

The passage (4) forms an inlet duct (4a) which is cylindrical, for example, through which the end of a cable (5), preferably an elastic cable, is inserted into the hook, and it also forms an outlet duct (4b) whose shape is frustoconical, for example, opening out so as to face the curve of the J-shape, with the junction between the two ducts forming a shoulder (4c) which constitutes an abutment.

The mold cavity is designed so that the metal wire ring (3) is completely embedded in the injected material (M) and is situated around the inlet duct (4a) close to the shoulder (4c).

In conventional manner, the end of the cable (5) is folded back onto itself and is crimped by means of a metal clip (6), e.g. a steel ring which is flattened after crimping. When traction is applied to the cable, this crimped end is caused to bear against the junction (4c) between the two ducts as reinforced by the ring (3) of the wire (1) (Figures 3 and 4).

The invention is not limited to using a clip for fitting to the end of the cable. It can be substituted by any means capable of maintaining the enlarged end of the cable.

The inlet edge (9) of the inlet duct (4a) is rounded so as to avoid the presence of any sharp edge which could injure the cable.

This advantage does not exist in hooks where the synthetic material is molded directly onto the cable since under such circumstances:

· the plastics material becomes embedded in the cable, giving rise to sharp edges that can injure it; and

· contact between the molten material and the synthetic covering of the cable can degrade the covering.

The mold cavity is designed so that the handle block (B) is of any desired ergonomic shape, e.g. having lateral recesses (a, b, c, d) enabling the hook to be held between the fingers, together with projecting portions (e, f) against which the fingers can bear. The lateral recesses can be made in portions of the block which project from the block, such as the recess (a) situated beside the shank (2).

The projecting portion (e) which faces the end (E) of the hook serves for guidance purposes while the hook is being engaged on a bar or on any other part onto which it is to be hooked.

The molded block (B) can carry a pivoting safety tongue (7) suitable for bearing against the inside of the free end (E) of the hook (Figure 5), in conventional manner.

A plug can close the inlet to the passage (4a) around the cable, thereby giving the hook a finished appearance.

The free end (E) of the hook can receive very effective protection by being coated with an extra thickness of material (Figure 7).

A ring handle (8) can be provided to make the hook easier to use in some cases (Figure 8).

The strength of the hook is such that it can receive bars of large dimensions (P) and (P_1), whereas with a standard hook these dimensions must be restricted so as to avoid weakening the ability of the hook to withstand being prized open.

Another, non-negligible advantage of the invention lies in the possibility of regularly inspecting the quality of the crimping and the quality of the elastic, which is not possible with hooks that are molded directly onto the cable.

It will also be observed that the coating material does not have any holes, whereas in earlier devices, the locations of parts for holding the metal core in the mold leave ~~said~~ the core visible at certain locations of the over-molded product, thereby requiring ~~said~~ the locations to be provided with additional protection so as to avoid oxidation and swelling of the core, which could possibly lead to the coating being destroyed.

The invention is not limited to the embodiment described but extends to any variant that can be obtained by replacing the means described with means that are functionally equivalent.